

attached version is captioned "Version with Markings to Show Changes Made".

1. (amended) A method for growing single crystals of perovskite oxides, which show abnormal grain growths by means of heating, the method comprising the steps of:

B'
(a) having a perovskite seed single crystal adjoined to a perovskite polycrystal; and

5/27 (b) heating a combination of the seed single crystal and the polycrystal to have the seed single crystal grow into the polycrystal, the heating being carried out under the condition that abnormal grain growths are induced at the interface between the polycrystal and the seed single crystal and are repressed inside the polycrystal.

B² 5/27 5. (amended) the method as claimed in claim 1, wherein the heating of said step (b) is carried out under the condition that additives for promoting abnormal grain growths are locally added to a combination of the seed single crystal and the polycrystal.

B³ 5/27 8. (amended) The method as claimed in any one of claims 1 to 5, wherein the seed single crystal of step (a) is a perovskite single crystal produced by said method.

B⁴ 10. (amended) the method as claimed in any one of claims 1 to 5, further comprising the step of:

597 prior to the step (a), determining the crystal orientation of the seed single crystal, grinding a specific crystal face of the seed single crystal in the crystal orientation determined, and adjoining the ground seed single crystal to the polycrystal to determine the crystal orientation of a single crystal to be grown into the polycrystal from the seed single crystal.

11. (amended) The method as claimed in any one of claim 1 to 5, further comprising the step of:

prior to the step (a), molding the polycrystal powder or processing the polycrystal into a specific shape which is intended as a final shape, and then adjoining the shaped polycrystal to the seed single crystal, to produce a single crystal having said final shape without a separate step for processing of the single crystal.

12. (amended) The method as claimed in any one of claims 1 to 5, further comprising the step of:

prior to step (a), preparing a polycrystal having a specific porosity, pore size and pore shape by adding an additive to the polycrystal, and changing the amount of a liquid phase or the sintering temperature, atmosphere or

pressure of the polycrystal, to control the porosity, the pore size and shape in the single crystal to be grown in the polycrystal.

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13. (amended) The method as claimed in any one of claims 1 to 5, wherein the perovskite polycrystal of the step (a) is the polycrystal having a composition gradient that changes discontinuously or continuously by adding one or more selected from the group consisting of BaO, Bi₂O₃, CaO, CdO, CeO₂, CoO, Cr₂O₃, Fe₂O₃, HfO₂, K₂O, La₂O₃, MgO, MnO₂, Na₂O, Nb₂O₅, Nd₂O₃, NiO, PbO, Sc₂O₃, SmO₂, SnO₂, SrO, Ta₂O₅, TiO₂, UO₂, Y₂O₃, ZnO, and ZrO₂ into perovskite structures to the perovskite polycrystal.

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16. (amended) the method as claimed in any one of claims 1 to 5, the perovskite polycrystal is characterized in that one or more additives selected from the group consisting of BaO, Bi₂O₃, CaO, CdO, CeO₂, CoO, Cr₂O₃, Fe₂O₃, HfO₂, K₂O, La₂O₃, MgO, MnO₂, Na₂O, Nb₂O₅, Nd₂O₃, NiO, PbO, Sc₂O₃, SmO₂, SnO₂, SrO, Ta₂O₅, TiO₂, UO₂, Y₂O₃, ZnO, and ZrO₂ to form a solid solution into perovskite structures are added to the polycrystal.